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**UNITED STATES DISTRICT COURT
DISTRICT OF NEW JERSEY**

NL INDUSTRIES, INC., Plaintiff, vs. OLD BRIDGE TOWNSHIP, et al., Defendants.	Civil Action No.: 3:13-cv-03493-MAS-TJB
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AFFIDAVIT OF CHRISTOPHER T. REITMAN

CHRISTOPHER T. REITMAN, of full age, upon his oath deposes and says:

1. I am an Environmental Professional employed by Advanced GeoServices, Corp. ("Advanced GeoServices"), a civil and environmental consulting firm. NL Industries, Inc. ("NL") retained Advanced GeoServices beginning in 2007 to provide services with respect to the properties subsequently designated as the Raritan Bay Slag Superfund Site ("the RBS Site"), which is located in Old Bridge and Sayreville, Middlesex County, New Jersey. I have served as the Project Manager for the services provided by Advanced GeoServices with respect to the RBS Site since 2007. The following factual statements are true and accurate based upon my personal knowledge.

2. I prepared this Affidavit at the request of NL's counsel to identify services provided by Advanced GeoServices to NL with respect to the RBS Site, and the approximate amounts that NL paid for those services.

3. Advanced GeoServices completed reviews of historical documents and other information to understand the sequence of development at the RBS Site, assist in the identification of Potential Responsible Parties ("PRPs") that might have liability for any remedy required at the RBS Site, and collect information to help evaluate potential remedial alternatives. This included:

- a. Reviewing historical maps, photographs, historical deeds, and regulatory files, and discussing the history of the RBS Site (and particularly the Seawall and Western Jetty) with regulators and officials, including Eugene Keller of the New Jersey Department of Environmental Protection ("NJDEP") Coastal Engineering Group, and Bernie Moore who had retired from the Coastal Engineering Group. An on-site file review was conducted at the Coastal Engineering office.
- b. Researching former owners of portions of the RBS Site, including Charles Ludwig and corporations he was a significant owner of, such as Liberty Trucking and Delta Excavating.
- c. Researching other lead smelters operating in the vicinity of the RBS Site during the relevant time period.
- d. Researching metal characteristics of slag.
- e. Researching smelting and associated activities of the former ASARCO facility located in Perth Amboy, New Jersey.
- f. Researching historic lead, arsenic, and fuel oil usage within pesticides applied in New Jersey wetlands (including areas of the RBS Site) to kill mosquitoes.

- g. Researching RBS Site flood zone characteristics for the 100 year storm and previous storms in New Jersey.
- h. Researching the shore protection project undertaken by the United States Army Corps of Engineers and their contractors in the 1960s in the vicinity of the Seawall and in the southern portion of the Raritan Bay.
- i. Researching the Seawall construction activities completed by Sea-Land Development, which was coordinated with and supervised by the United States Army Corps of Engineers, as well as the eventual construction of the Seawall in what is now the Old Bridge Waterfront Park, which is part of the RBS Site.
- j. Researching available characterizations of the Raritan Bay and biota in the bay.
- k. Researching the construction, ownership, and maintenance of the Western Jetty.
- l. Reviewing sampling and reports completed by NJDEP and the United States Environmental Protection Agency ("USEPA") as part of their activities at the RBS Site.
- m. Developing plans to show specific RBS Site sample locations and the corresponding analytical results from a database provided by USEPA.
- n. Researching potential applications of USEPA's Area of Contamination policy at the RBS Site. This was done in part at the request of Frank Cardiello of USEPA because there was confusion as to how to manage the many separate areas of contamination at the RBS Site under USEPA policies.
- o. Researching background conditions and clean-up levels at other Superfund sites in the area to assist the evaluation of potential remedial alternatives.

The approximate cost and expense associated with this work was \$110,000.

4. Advanced GeoServices provided input on NL's behalf on issues with documents relating to the RBS Site generated under the direction of the USEPA, including the Remedial Investigation ("RI") (December 22, 2011), the Biological Assessment/Ecological Risk Assessment (April 2010), and the Characterization Report for the Development of Stabilization Approaches (September 23, 2011). These comments were provided to EPA on February 20, 2012 and included the following significant points:

- a. The groundwater has not been impacted by slag from the RBS Site.
- b. Other sources of lead and arsenic exist in the area, which contribute to the high RBS Site specific background concentrations calculated by USEPA.
- c. The ecological risks at the RBS Site are manageable when appropriate concentrations and foraging areas are taken into consideration, and once source control is achieved.
- d. Errors and inconsistencies were found in the Human Health Risk Assessment which resulted in an overestimation of the RBS Site risks.

Subsequent to receipt of NL's comments (and I believe based at least in part on the information that NL and Advanced GeoServices provided), the USEPA modified their analysis of the risks associated with arsenic, and changed their previously indicated intent to base the remedy for the RBS Site upon a goal of remediating arsenic contamination. Instead, no clean-up goal for arsenic in soil or sediments was utilized in the Record of Decision ("ROD") for the RBS Site. The USEPA also significantly modified the clean-up goal for lead following the submission of the NL comments.

Additionally, USEPA modified their conclusions that had been presented in the Feasibility Study regarding groundwater impacts. In the ROD for the RBS Site, drafted after USEPA's receipt of NL's comments, USEPA stated that groundwater does not present an unacceptable risk to human health and the environment.

The approximate cost and expense associated with the work completed by Advanced GeoServices was \$40,000. Another environmental consultant retained by NL, Gradient Corporation, also provided services (invoiced separately and not included in this cost approximation) which were associated with this scope of work.


5. At the request of USEPA, Advanced GeoServices prepared comments on behalf of NL for submission to the USEPA's National Remedy Review Board with respect to the USEPA's Feasibility Study. The comments were provided to USEPA on March 12, 2012. The approximate cost and expense associated with this work was \$40,000.

6. Advanced GeoServices completed in-the-field investigations at the RBS Site or in the vicinity on three occasions. Advanced GeoServices completed an investigation of conditions at the Seawall on July 13, 2009, to help characterize this area. On June 22, 2012, Advanced GeoServices completed an investigation of background conditions in the vicinity of RBS Site, and on July 13, 2012, obtained samples to analyze for metal concentrations and physical characteristics of the slag at the RBS Site. These investigations were undertaken to gather supplemental information to fill data gaps left by the RI activities conducted by USEPA. The approximate cost and expense associated with this work was \$110,000.

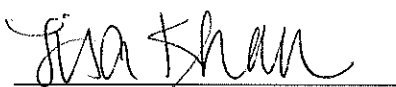
7. At the request and encouragement of the USEPA, Advanced GeoServices on behalf of NL completed an Engineering Evaluation/ Cost Analysis ("EE/CA") of potential remedial options for the RBS Site. The EE/CA was prepared in the format requested by USEPA and evaluated interim measures designed to address the Principal Sources of lead located in Old Bridge, where source remediation activities would have the greatest impact in reducing risks at the RBS Site. Several of the activities mentioned in Paragraph 3 above provided information to help evaluate remedial alternatives for consideration in the EE/CA. The EE/CA was submitted to EPA on May 22, 2012. The approximate cost and expense associated with this work was \$75,000.

8. Advanced GeoServices submitted a Magnetic Separation Bench Scale Testing Technical Report to USEPA on July 24, 2013. The report indicated that magnetic separation treatment technology would cost effectively reduce the amount of material requiring off-site disposal, reduce the amount of material which needed to be imported to backfill site excavations, and reduce the amount of material which needed to be placed in off-site landfills. On September 25, 2013, USEPA provided comments on the Magnetic Separation Bench Scale Testing Technical Report. The comments from USEPA stated they recognized the "utility of the [magnetic separation] technique for the sands and gravel tested," which represent over 100,000 tons of material at the RBS Site. At the request of the USEPA, Advanced GeoServices is currently preparing a workplan for a pilot study to further evaluate the feasibility of full scale implementation of a magnetic separation approach at the RBS Site. The approximate cost and expense associated with this work, to date, is \$27,000.

9. Advanced GeoServices prepared for and attended numerous meetings of the USEPA-sponsored Raritan Bay Slag Community Advisory Group. As part of these activities I helped keep the citizens informed on activities being completed NL, answered their questions, and obtained their feedback on various potential remedial alternatives. The approximate cost and expense associated with this work, to date, is \$35,000.


Christopher T. Reitman

Sworn and subscribed to
before me this day of
January 30, 2014.



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